

## **Of Mice and Moms:**

Environment, Social Stressors and Disparities  
in Birth Outcomes

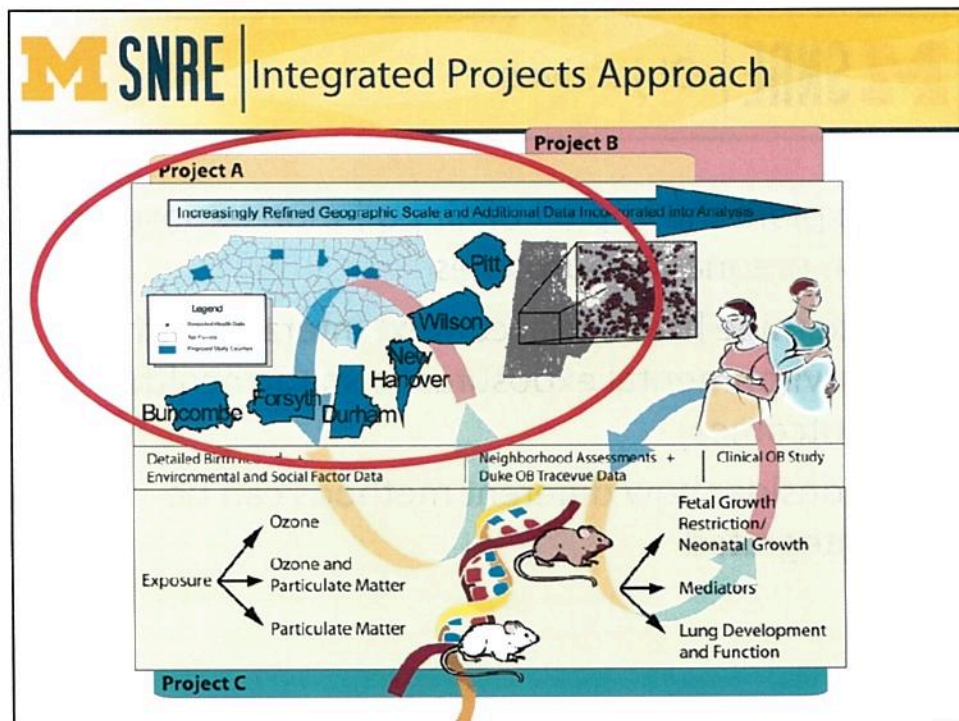
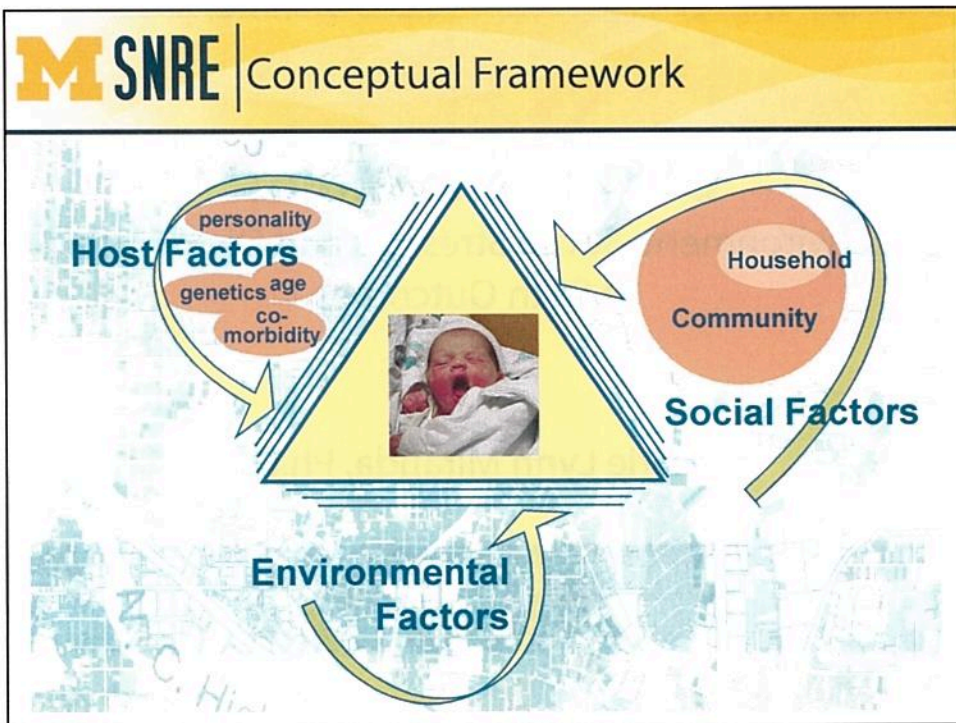
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SCHOOL OF NATURAL RESOURCES AND ENVIRONMENT

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### **M SNRE** | Objectives

- Explore the impact of air pollution exposures on pregnancy outcomes
- Examine how social context interacts with environmental exposures to shape health outcomes
- Consider how different methods can be integrated

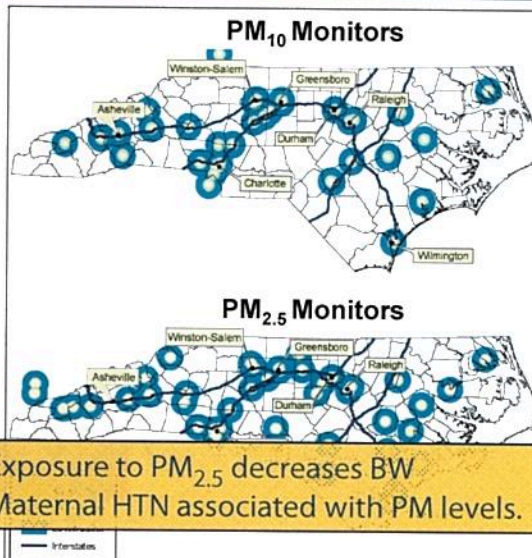






## Air Pollution Application

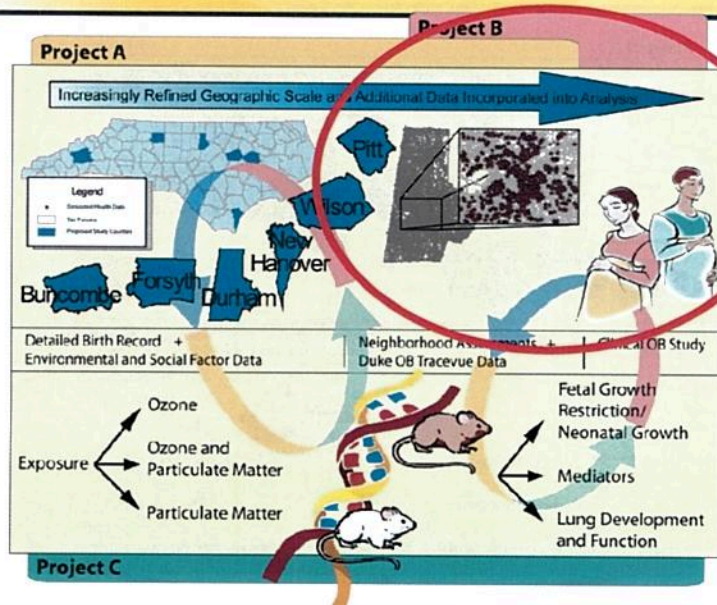
- Geocoded all births in NC, 2000-2002
- Linked births to AQS monitoring data of criteria air pollutants
- Restricted to births within 5, 10, or 20 km of monitors

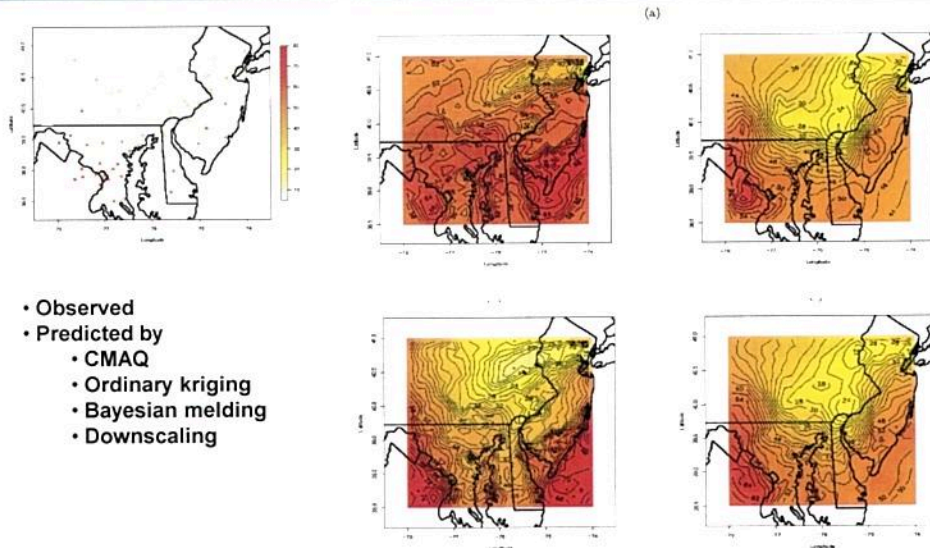


- Exposure to  $PM_{2.5}$  decreases BW
- Maternal HTN associated with PM levels.

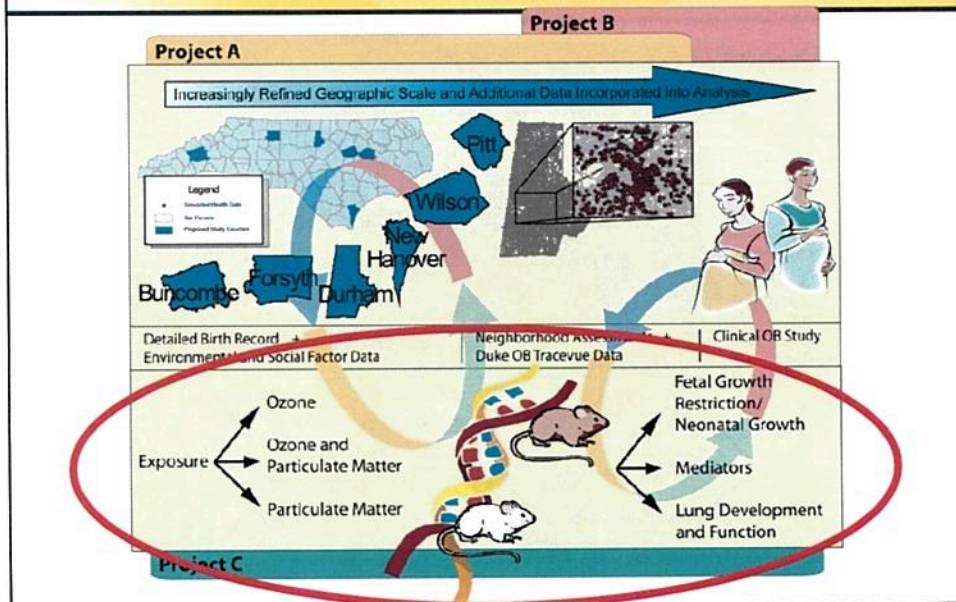


## Integrated Projects Approach

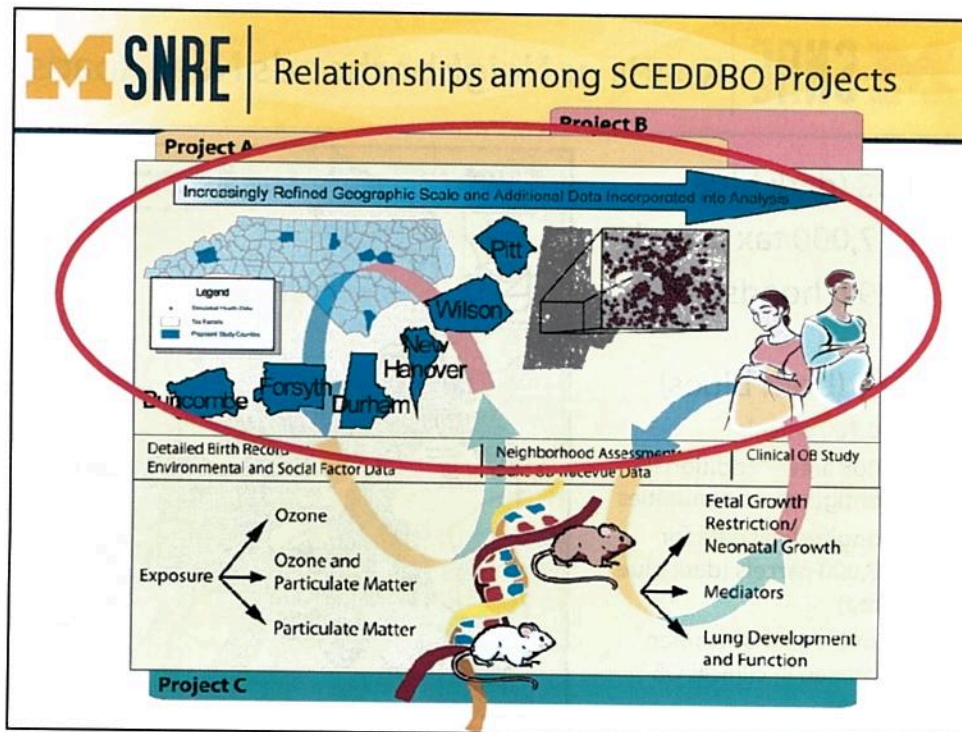
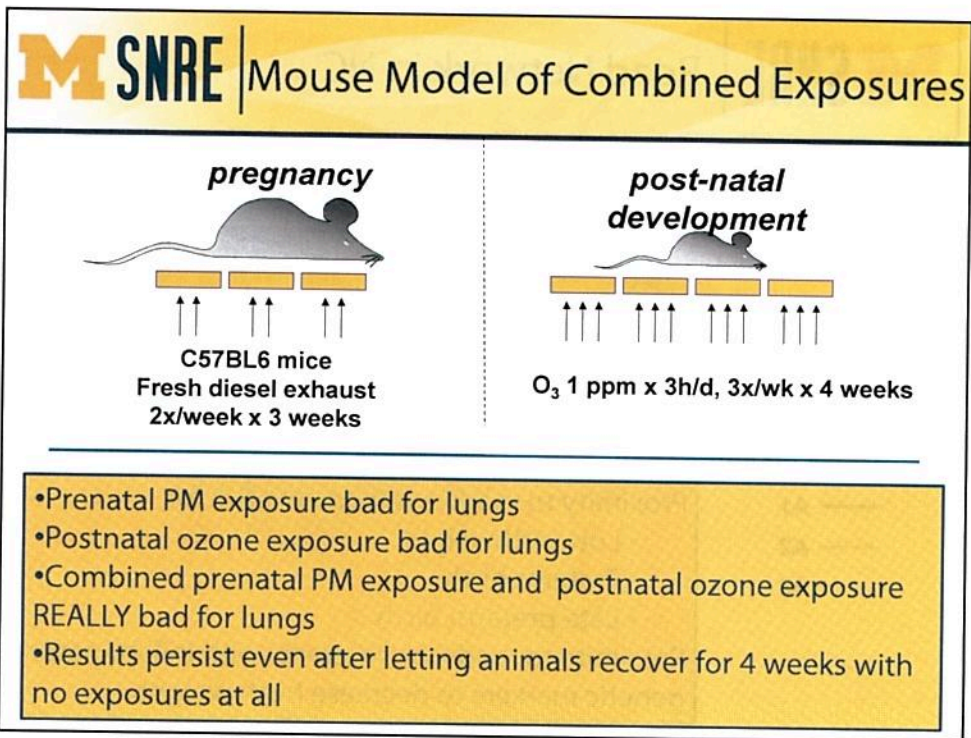




Berrocal *et al.* (2010, 2010, 2011, 2011) *JABES, Ann App Stat, Biom, Envmet*









## Road Network in NC



### Road classification

- A1
- A2
- A3

Proximity to roadways increases risk for

- Low birthweight
- Preterm birth
- Late preterm birth

Proximity to roadways interacts with inflammatory genetic markers to decrease birth weight



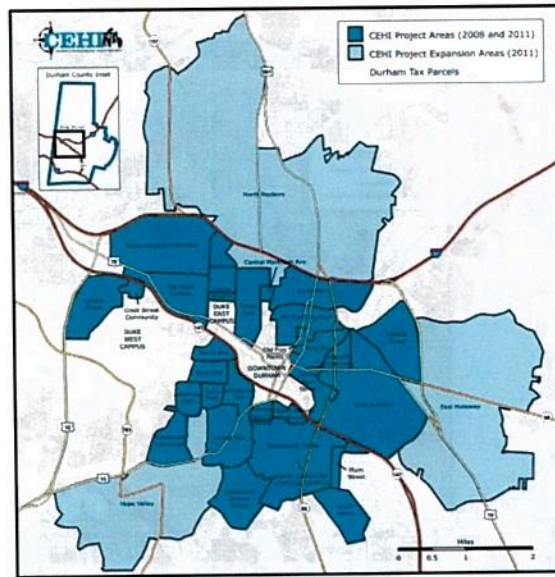
## Roads or Neighborhoods Near Roads?

2008 (dark blue)

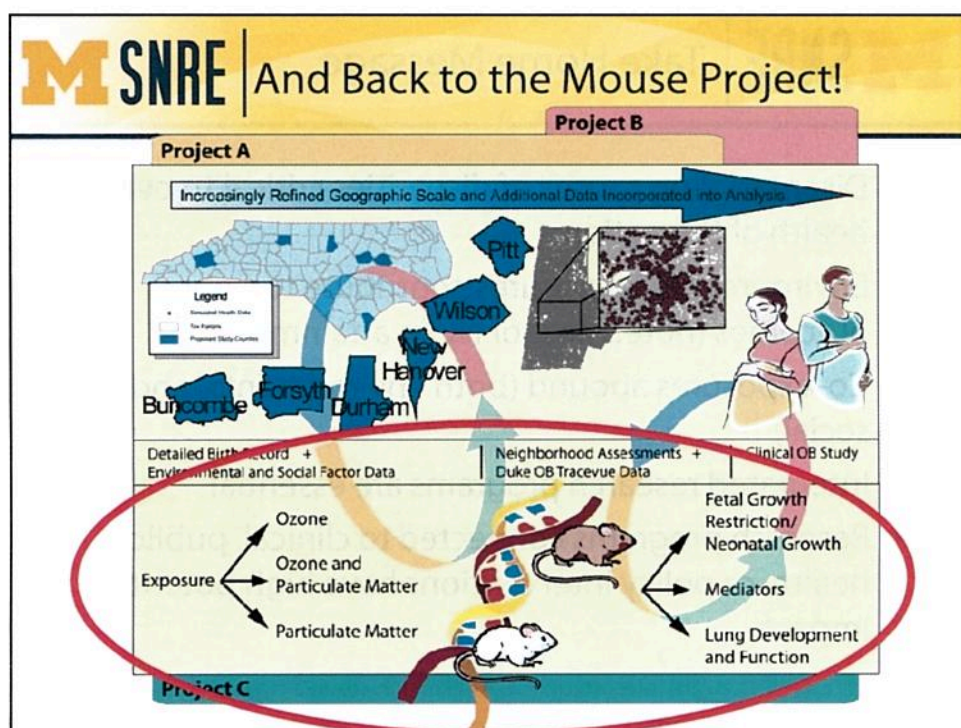
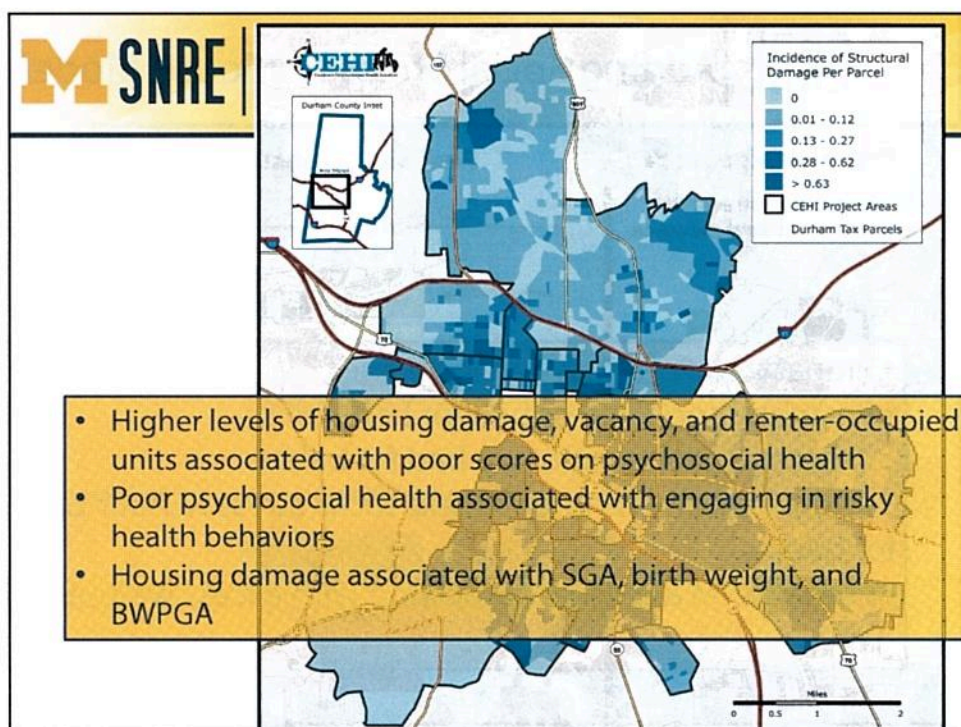
- 17,000 tax parcels
- 29 n'hoods

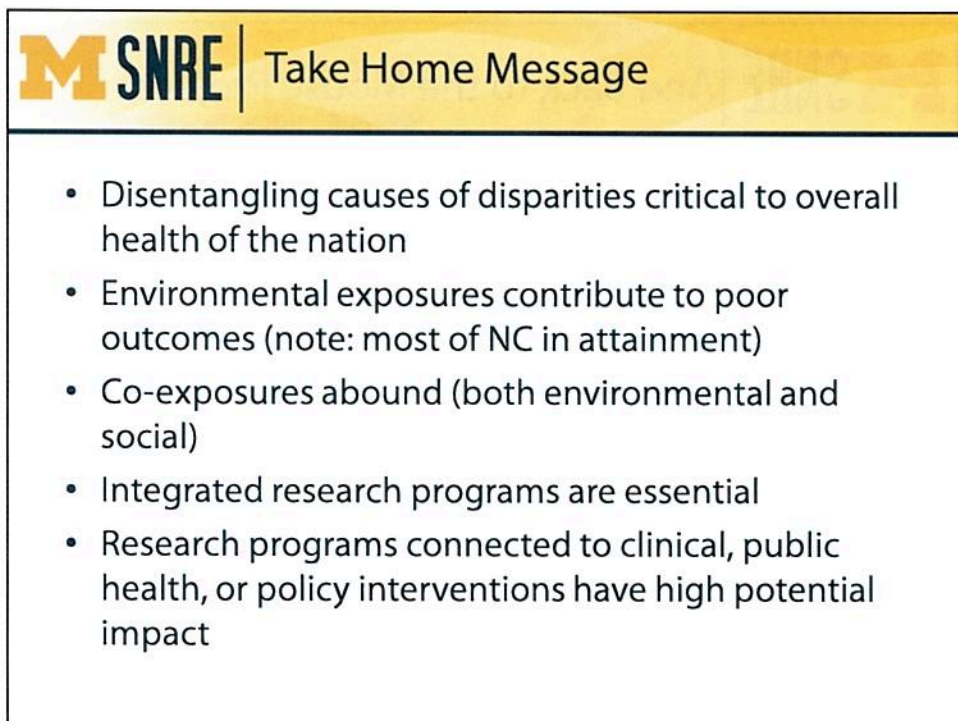
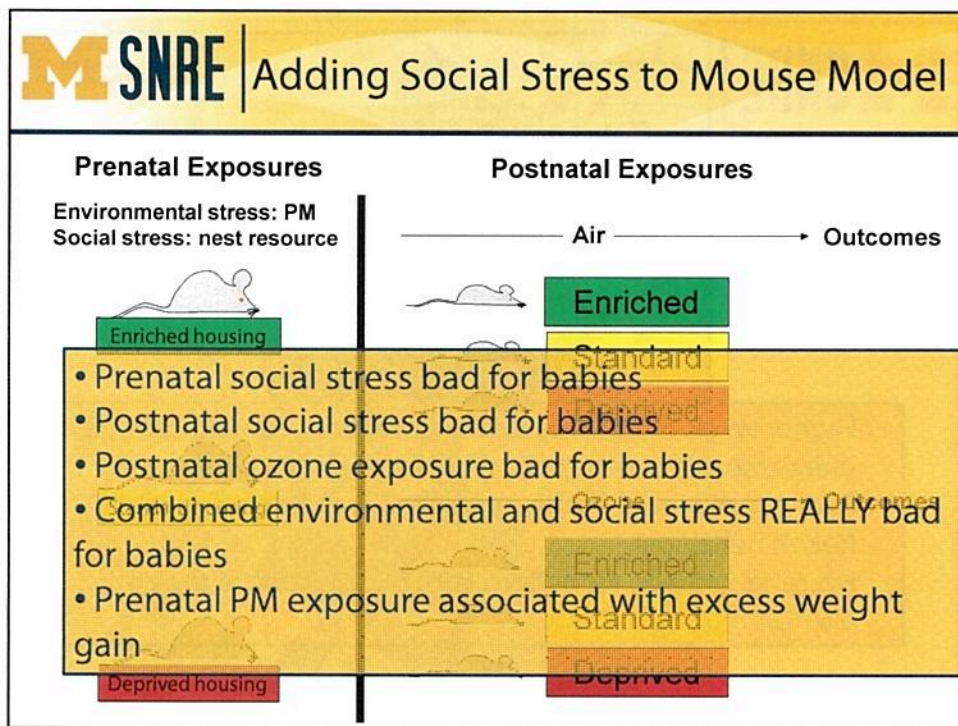
2011 (both blues)

- 30,700 parcels
- 2008 area + additional contiguous communities
- Longitudinal data for 17,000 parcels (dark blue area)
- Covers 65% of women enrolled in clinical OB study











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<http://www.snre.umich.edu/cehi/>